

Proposed Goods Movement Projects and Policy Options

Agenda

- Opening Remarks
- Introduction Trends and Issues
- Port Related Goods Movement Market Segmentation
- Previous RTP Goods Movement Initiatives
- Newly Proposed/Current Air Quality Related
 Initiatives
- Summary of Funding Requirements
- Discussion

Introduction

Why is Goods Movement critical to the SCAG Region?

What benefits does it provide?

What issues does it pose?

Good Jobs for Growing Population

Population is expected to grow by more than

6,000,000

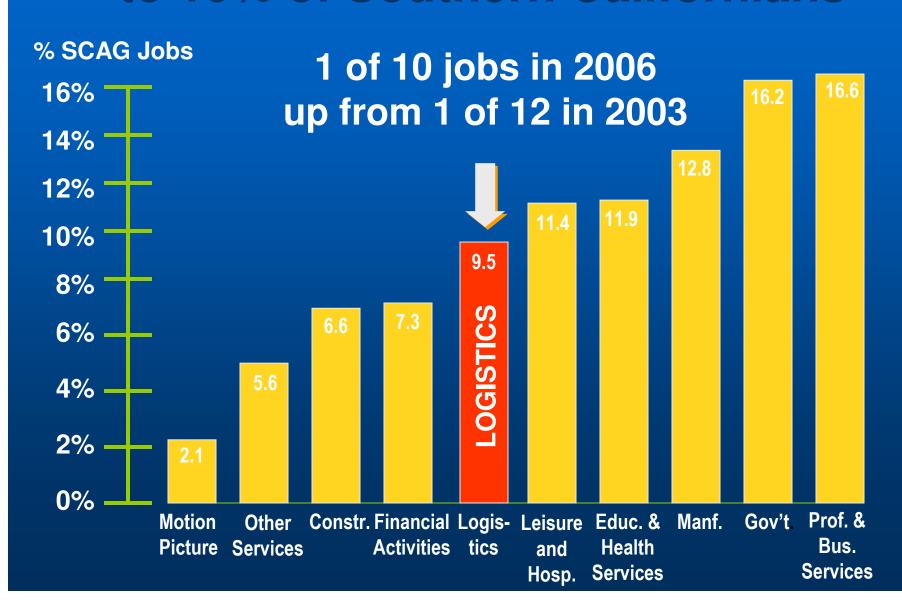
over the next two decades

38%

more than today

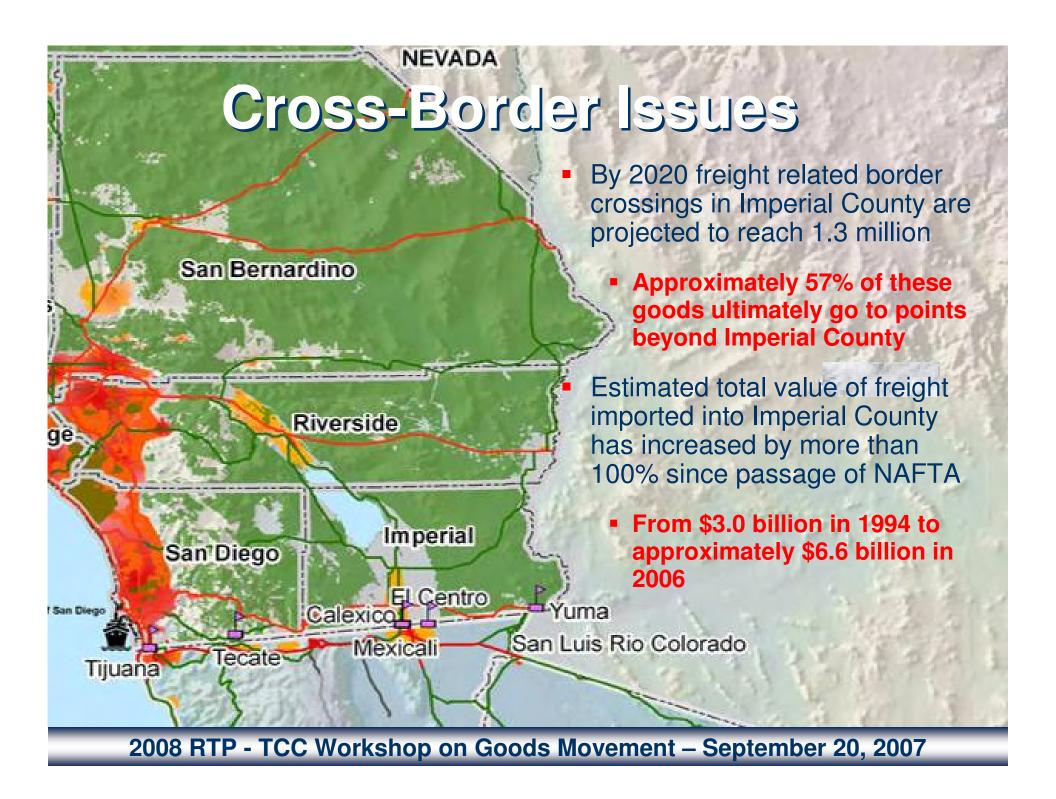


The Logistics Industry Provides Jobs to 10% of Southern Californians









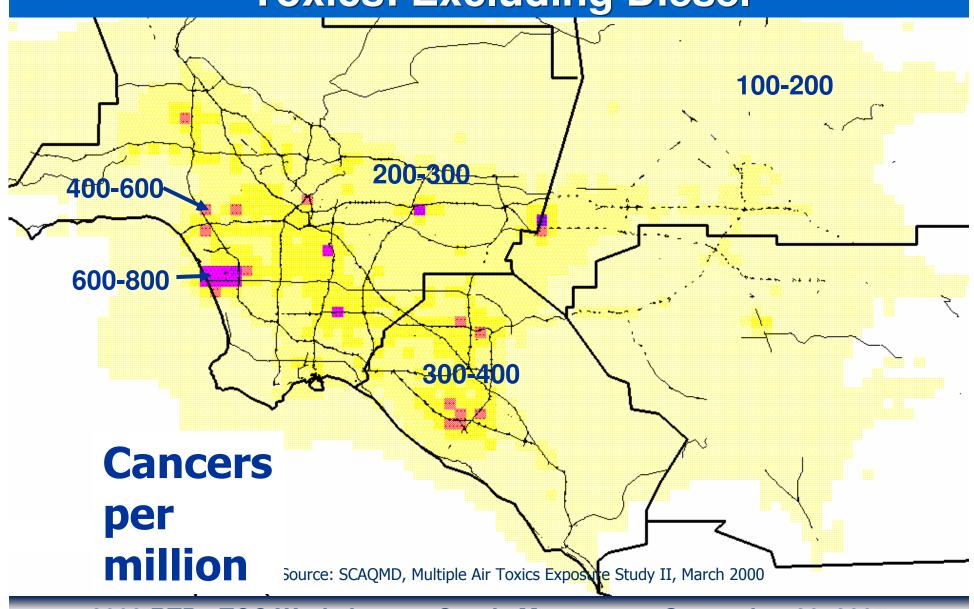


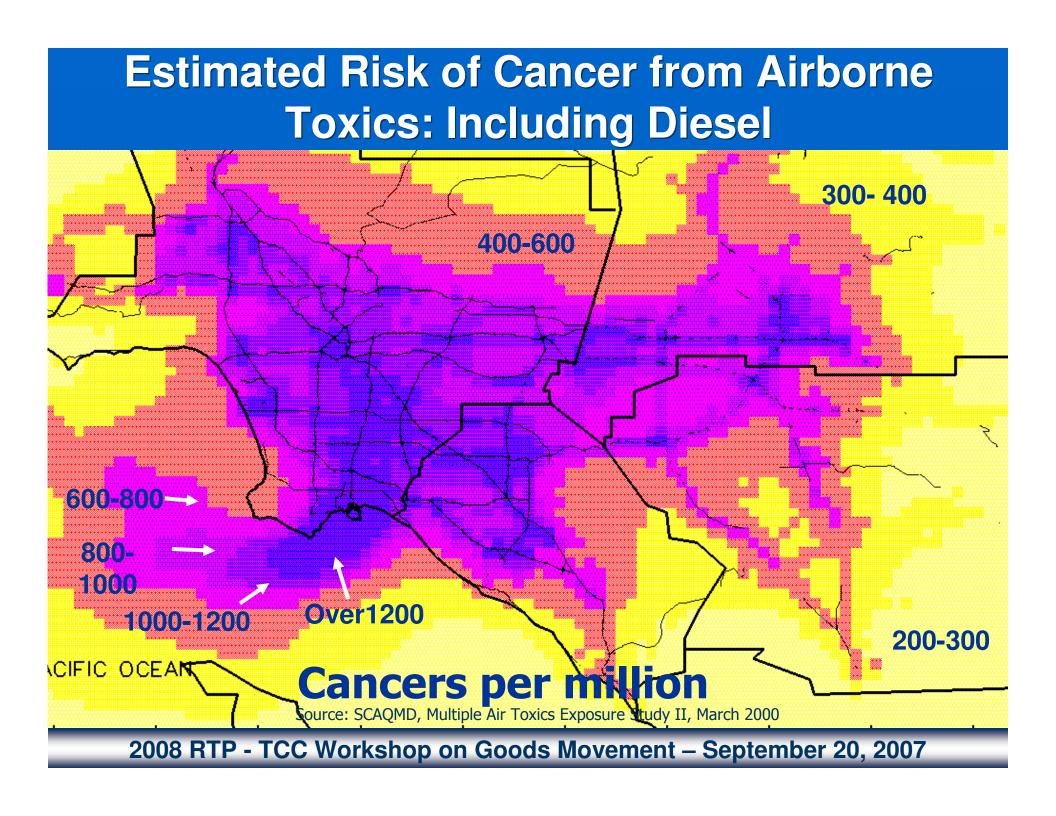
The Pollutants Generated are Putting Our Health in Jeopardy



- The South Coast region continues to have the worst air quality in the U.S.
- Diesel Particulates(PM2.5) are at the root of the problem
- 5,400 premature deaths a year
- -140,000 children with asthma





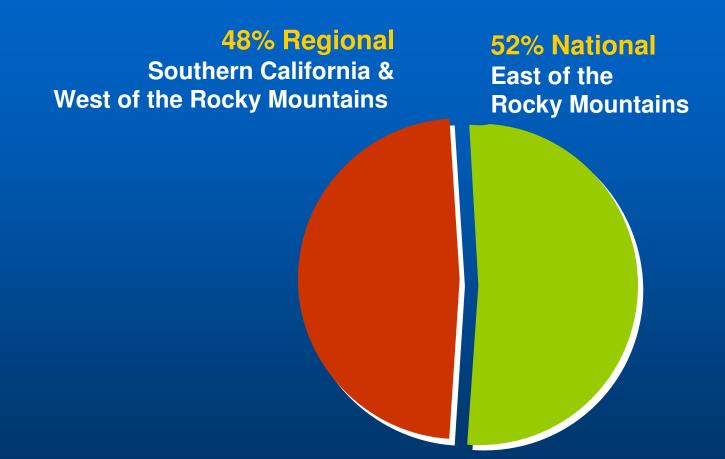


Developments

- RTP has included a number of projects for some time, including:
 - Rail Expansion/Mitigation Strategies
 - Truck Lanes
- The Multi County Goods Movement Action
 Plan is likely to have similar recommendations
- The 2008 RTP must include more specific project details to meet financial constraint requirements

Market Segmentation

San Pedro Bay Port Container Market



San Pedro Bay Port Container Market

48% Regional

Southern California & West of the Rocky Mountains

52% National

East of the Rocky Mountains

30% Local Transport

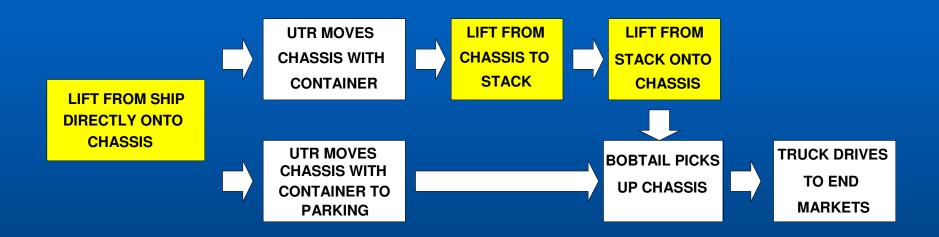
Directly transported by truck to end markets

18% Transload Truck

Transported by trucks, then transloaded Into larger domestic trailers, then transported by trucks to end markets

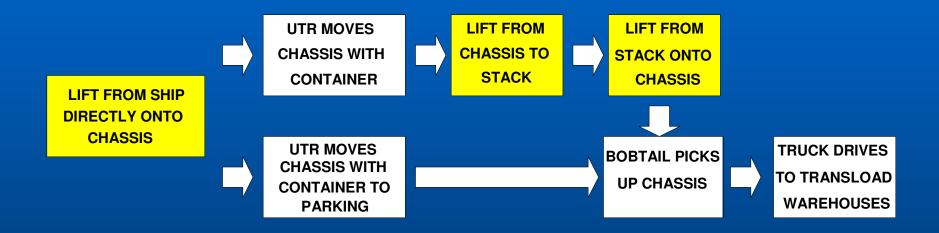


How does Local Transport Work?



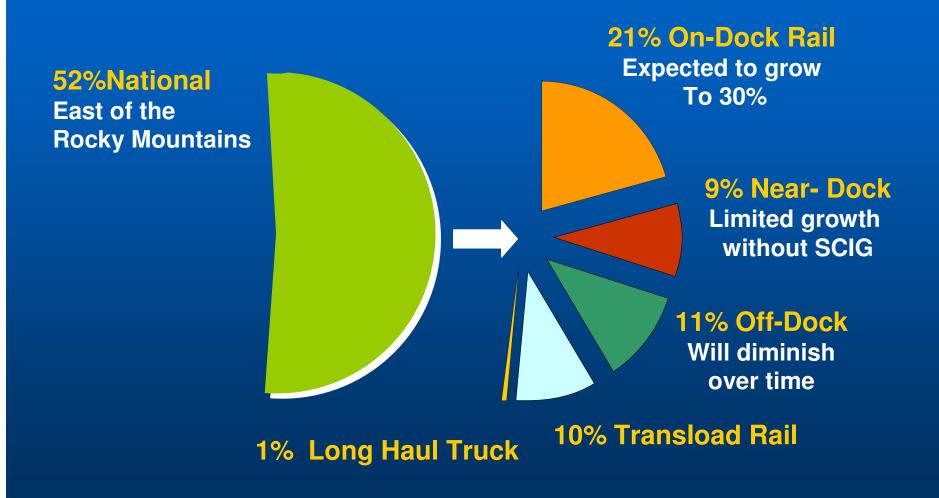
- Demand 4.3M TEUs in 2005, 12.8M TEUs in 2030
- Truck Cost \$250 (San Bernardino) to \$300 (Victorville)
- Capacity Constraint Freeway System (congestion)

How does Truck Transload Work?

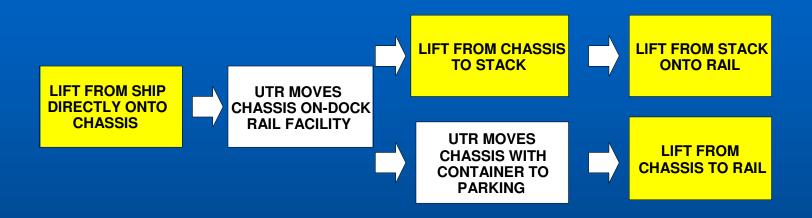


- > Demand 2.6M TEUs in 2005, 7.7M TEUs in 2030
- > Truck Cost \$175 (trips within 25 miles) to \$300 (Victorville)
- Capacity Constraint Freeway System (congestion)

The National Market Is Divided Into Five Sub Markets Dominated by Rail Transport

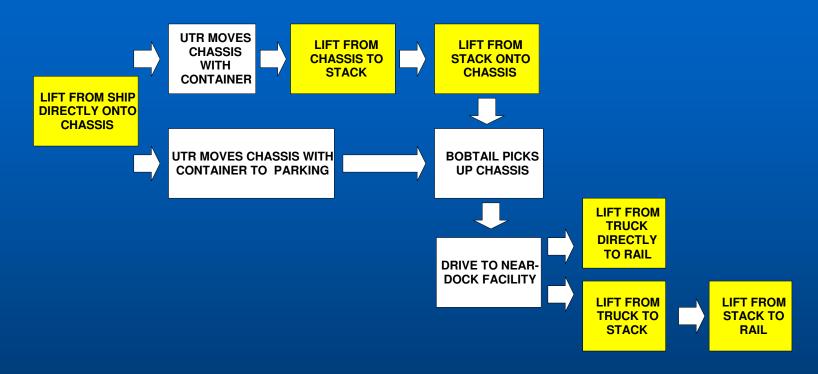


How does On-Dock Rail Work?



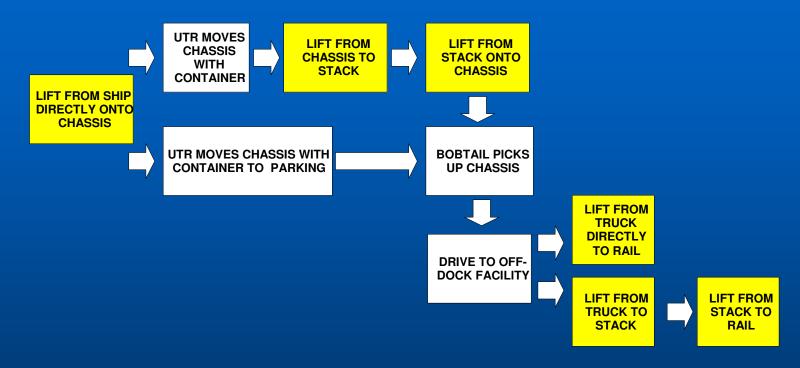
- Demand 2.9M TEUs in 2005, 17M TEUs in 2030
 (highest projected growth of all market segments)
- Capacity Constraint On-dock rail facilities

How does Near-Dock Rail Work?



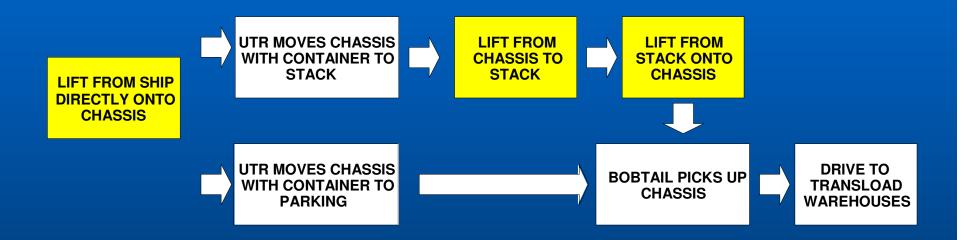
- Demand 1.4M TEUs in 2005, 1.8M TEUs in 2030 without SCIG, 3.5M TEUs in 2030 with SCIG
- Truck Cost \$150
- Capacity Constraint Near-dock rail capacity

How does Off-Dock Rail Work?



- Demand 1.5M TEUs in 2005, 0 TEUs in 2030
- Truck Cost \$175
- Capacity Constraint Off-dock rail capacity (will be consumed by transload and domestic)

How does Transload Rail Work?



- Demand 1.4M TEUs in 2005, 4.2M TEUs in 2030
- Truck Cost \$175
- Capacity Constraint Off-dock rail capacity

Previous RTP Goods Movement Initiatives

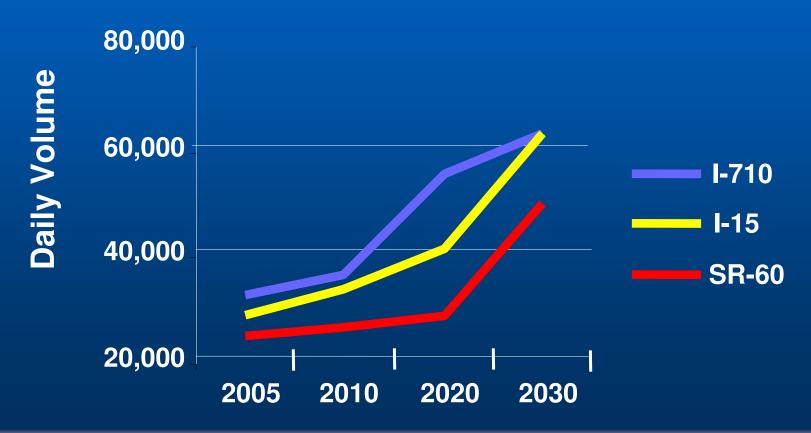
Truck Lanes

Two Truck-Only Lanes to Relieve Congestion and Address Goods Movement Growth



Growth Projected Cannot Be Addressed With Our Current Infrastructure

SCAG's Projected Heavy Truck Average Daily Traffic (ADT)



Project Benefits

- Accommodates and provides improved mobility to trucks (close to free flow)
- Relieves congestion on general purpose lanes (equivalent to adding more than one free flow lane)
- Expected emission reduction due to congestion relief—additional reduction potential with use of Longer Combination Vehicles (LCVs)

Preliminary Implementation Phasing Proposed



Estimated Cost of \$20 Billion

Dedicated Truck Lane System

Route	Length (Miles)		Total Cost (\$000)	Per Mile Cost (\$000)	Lane Mile Cost (\$000)
I-710	19.55	78.2	\$3,519,000	\$180,000	\$45,000
SR-60	37.8	151.2	\$6,804,000	\$180,000	\$45,000
I-15	75.5	302.0	\$9,796,880	\$129,760	\$32,440
	132.85	531.4	\$20,119,880		

Proposed Cost Allocation Framework

Funding Source	Benefit	Percent Allocation	
Local Transportation Authorities	Equivalent of adding more than one mixed flow lane at less than 40 percent of the cost	20 percent	
Federal and State	Supporting the national and state economies	20 percent	
Trucks	Improved mobility and cost savings due to LCVs	30 percent	
Shippers	Improved mobility and support growth	30 percent	

Preliminary Funding Can be Modified as Needed

- TEU fees are assumed to start in 2009.
 Delays in fee collection will likely increase costs and delay project implementation
- LCVs can operate once all three phases are implemented
- Private sector could help expedite implementation in the form of a public private partnerships with guarantees from local transportation authorities, the State, and the Federal government

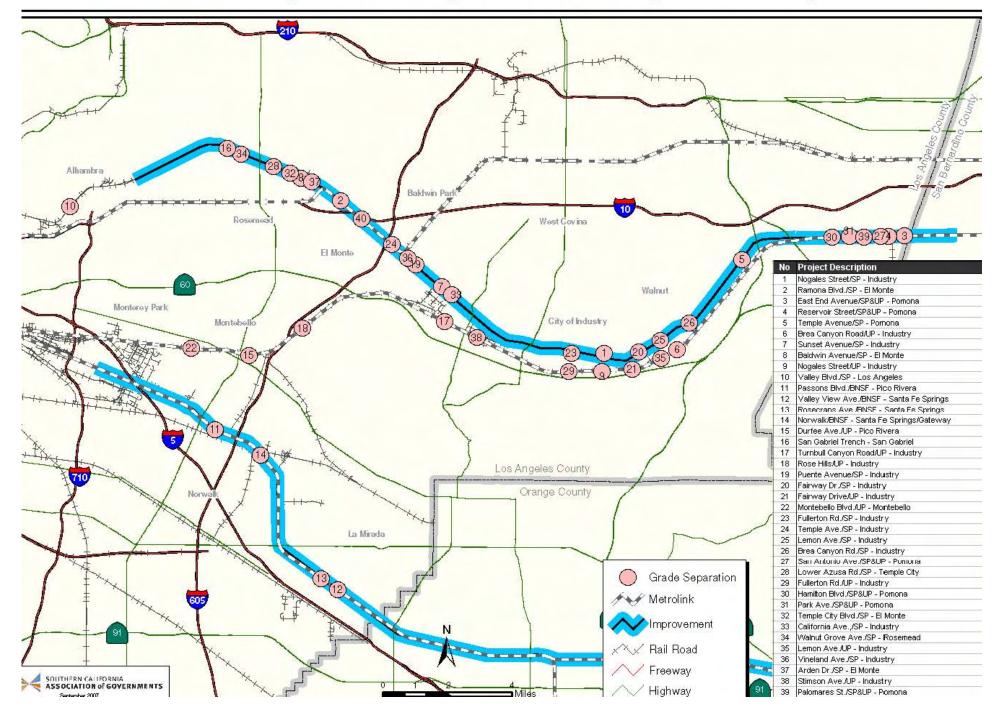
Freight Rail



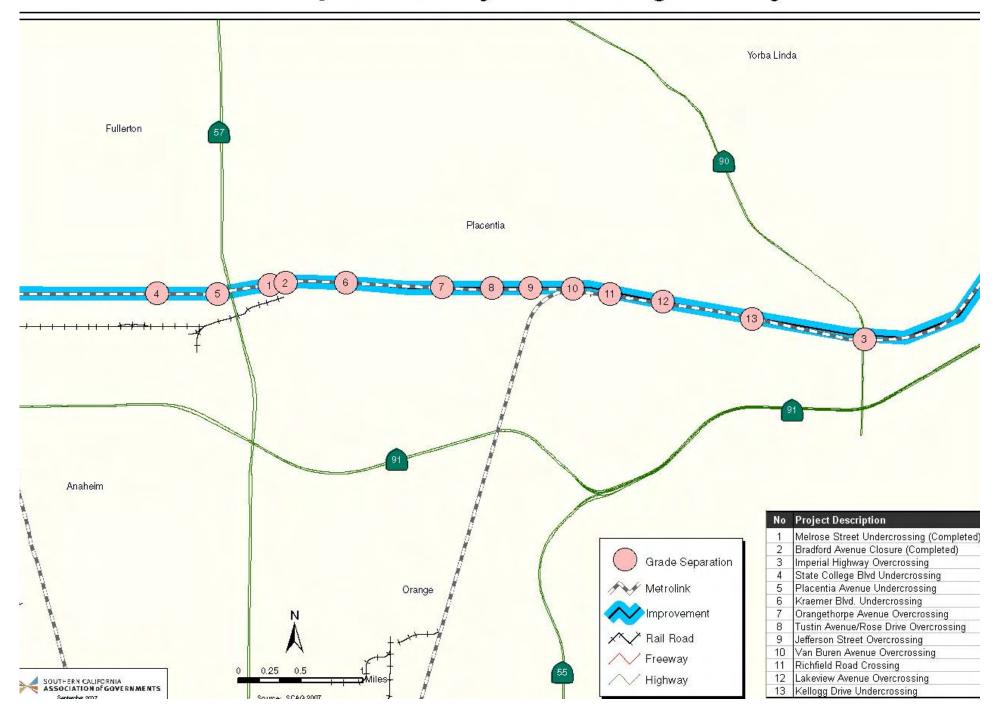
Grade Separation Investments

- The total cost of regional grade separation needs is \$4.6 billion
- The projects are consistent with county commission submittals and the Multi-County Goods Movement Action Plan
- Almost \$800 million have been committed locally to these projects

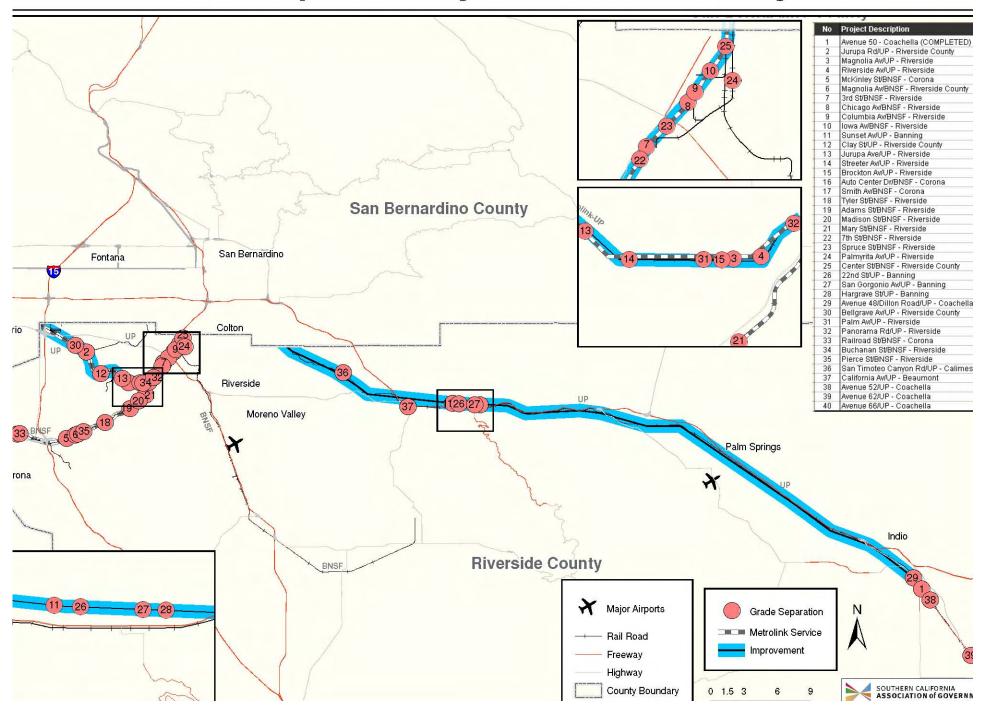
Grade Separation Projects in Los Angeles County



Grade Separation Projects in Orange County



Grade Separation Projects in Riverside County

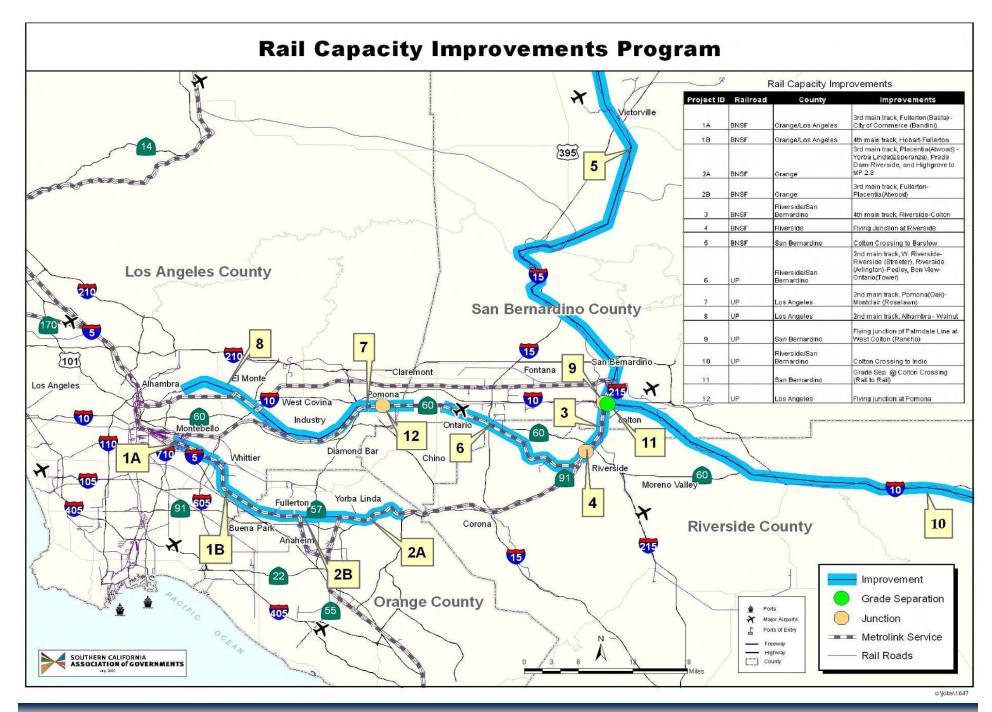


Grade Separation Projects in San Bernardino County



Rail Expansion Investments

- The total cost of regional grade separation needs is \$2.3 billion
- Expansion is needed for efficiency, expected growth, and Metrolink
- Expansion projects are best implemented after related grade separation projects are completed



Newly Proposed Initiatives

Freight Rail

Investment Package Strategic Principles

- Combine related rail investments into one package
- Package must include mobility and air quality projects
- All stakeholder groups must benefit from and contribute to the investment package
- Other needed rail investments will be addressed separately

Two Investment Packages Options

Rail Expansion + Grade Separations + Electrification

Rail Expansion + Grade Separations+ Engine Upgrades to Tier 4

RAIL EXPANSION AND GRADE SEPARATION HAVE BEEN PART OF YOUR SCAG RTP SINCE 2000

Investment Package

Original Estimates

Congestion Reduction	Current (07) Second Se	
Rail Capacity AdditionsGrade Separations	\$ 2.29 \$ 4.60 \$ 6.89	
 Alternative Power* Phase I Electrification Phase II Electrification Phase III Electrification 	\$ 3.40 \$ 2.50 \$ 0.53	
Cleaner Engines		

 Acceleration of locomotive upgrade by railroads

\$ 2.05 \$ 2.05

Note:*Preliminary capital cost estimates (escalating 1992 study results to current dollars); operating costs not included.

2008 RTP - TCC Workshop on Goods Movement - September 20, 2007



Electrification
Extension to
Chatsworth and
San Fernando

Miles Locon
40 5

Locomotives Cost \$0.53B

Electrification Feasibility Update

- Update assessment of rail electrification for three scenarios in the Los Angeles Basin
- Obtain up-to-date electrification infrastructure and electric locomotive costs
- Estimate electrification implementation time
- Focus on Scenario 1 as near term opportunity

Recent Rail Electrification Experience

- Northeast Corridor and Caltrain electrification projects were used as models
- Northeast Corridor Amtrak mainline between New Haven and Boston (157 miles)
 - Most recently completed major electrification project in U.S. (1996-2000)
 - Extended electrified railroad that already existed between New Haven and Washington, DC
 - Primarily passenger services with freight service provided through trackage rights

Background (continued)

Caltrain

- Electrification project in progress, scheduled for completion in 2012
- Focus on the commuter rail line between San Francisco and San Jose (52 miles)
- Currently obtaining regulatory approvals in anticipation of final design activities
- Northeast Corridor and Caltrain configurations are similar
 - 25kV AC electrical power delivery through overhead wires, which is preferred for high speed, long distance operations

Scenario Costs

- Unit cost of electrification infrastructure was calculated as cost per route mile
- Caltrain cost of \$9.06M per mile was used to estimate scenario costs (rather than Northeast Corridor cost of \$5.85M per mile)
 - More similar cost inclusions Caltrain cost includes infrastructure modifications that are needed for LA Basin
 - Caltrain cost incorporates regional assumptions such as labor costs that are more applicable to LA Basin
- Cost of electric locomotive is ~ \$5.5M for Bombardier
 ALP 46, newer of two electric locomotives used in U.S.

Scenario Costs (continued)

Scenario	Cost of Electrification	Cost of Electric Locomotives	Total Cost
1 - Ports to Colton & San Bernardino (250 mi)	\$2.27B	\$1.98B (360)	\$4.25B
2 - Extension to Barstow & Indio (170 mi)	\$1.54B	\$1.98B (360)	\$3.52B
3 - Extension to Chatsworth & San Fernando (40 mi)	\$.36B	\$.30B (55)	\$.66B
Total, All Scenarios	\$4.17B	\$4.26B	\$8.43B

Scenario Costs (continued)

Scenario	Electrif	ication	Electric Locomotives		Total Costs	
	SCAG Est.	New Review	SCAG Est.	New Review	SCAG Est.	New Review
1	\$2.65B	\$2.27B	\$.72B	\$1.98B	\$3.37B	\$4.25B
2	\$1.8B	\$1.54B	\$.72B	\$1.98B	\$2.52B	\$3.52B
3	\$.42B	\$.36B	\$.11B	\$.30B	\$.53B	\$.66B
Total	\$4.87B	\$4.17B	\$1.55B	\$4.26B	\$6.42B	\$8.43B

Scenario #1 Schedule

- Construction rate was calculated as month per route mile
- Caltrain rate of .69 month per mile was used to estimate electrification construction time (rather than Northeast Corridor rate of .31 month per mile)
 - More similar train operations Caltrain construction will take place while 100 trains are running daily – heavily used freight lines in LA Basin will need to maintain service during constructions
 - Caltrain rate includes infrastructure modifications that also will be needed in LA Basin
- Schedule assumes concurrent work on all three lines, with rate applied to longest line in Scenario 1 (90 miles)

Scenario #1 Freight Lines



2008 RTP - TCC Workshop on Goods Movement - September 20, 2007

Scenario 1 Schedule (continued)

	Years	Timeframe
Preliminary Engineering &		
Institutional Processes	3.0 yrs	2007 - 2009
Environmental Approvals	1.5 yrs	2010 - 2011
Final Design	1.0 yr	2011 - 2012
Procurement & Contract	.5 yr	2012
Construction	5.2 yrs	2013 - 2017
Testing	1.0 yr	2018

Scenario 1 Schedule (continued)

- Five-year construction time is optimistic estimate
 - Requires three full construction crews
 - Work must be halted when trains pass
 - Night work also must contend with train operations
- Productivity issues point to need for additional time, but amount of time cannot be determined with certainty
- It is possible that seven years for construction is a good, realistic estimate, with new completion date of 2020

Scenario 1 Schedule (continued)

Preliminary Engineering &	Years	Timeframe
Institutional Processes	3.0 yrs	2007 - 2009
Environmental Approvals	1.5 yrs	2010 - 2011
Final Design	1.0 yr	2011 - 2012
Procurement & Contract	.5 yr	2012
Construction	7.0 yrs	2013 - 2019
Testing	1.0 yr	2020

Engine Upgrade to Tier 4

Proposed EPA Exhaust Emissions Standards

- 1. Tightening Emission Standards for Existing Locomotives When They Are Remanufactured
- 2. Set Engine-Out Emission Standards for Tier 3 Locomotives to Phase in Starting 2009
- 3. Set Engine-Out Emission Standards for Tier 4 Locomotives to Phase in Starting As Soon As Engines Are Available

Potential Locomotive Upgrade Strategies

- Accelerate to Tier-3 upgrades by providing an incentive to the railroads
 - This could start quickly and possibly be completed by 2014
 - NOx reductions are significantly lower than in electrification
- Accelerate to Tier-4 upgrades by providing an incentive to the railroads
 - Right now, this can start in 2014 at the earliest
 - It may be possible to also provide incentives to the manufacturers to accelerate the development and production of these engines
 - Either way, this strategy can be accomplished by 2020. NOx and PM reductions are similar to the 3 electrification scenarios combined
- Either option would cost about \$2.05 billion

Advantages and Disadvantages/Risks of Electrification

- Advantages
 - Technology exists and has been deployed before
 - Helps meet attainment goals in 2023 and beyond
- Disadvantages/Risks
 - Expense (over \$8 billion)
 - Disruptive to railroad operations
 - Unlikely to gain partial funding from railroads

Advantages and Disadvantages/Risks of Accelerated Locomotive Engine Upgrades

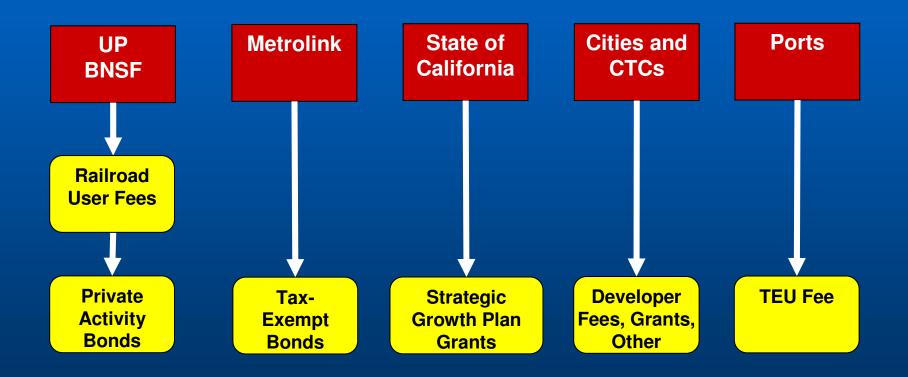
- Advantages
 - Cost is lower than electrification (\$2 billion vs. \$8 billion)
 - Railroads will eventually upgrade locomotives, likely to accelerate upgrades with proper incentives
 - Potential for partial funding by railroads
 - NOx and PM reductions by 2020 similar to electrification
- Disadvantages/Risks
 - Technology does not exist yet

Possible Funding Framework

Benefits by Stakeholder Group

- Railroads lower expansion costs (due to lower cost of borrowing, contributions from other stakeholders), corporate citizenship
- Metrolink increased capacity to continue and expand service
- Cities and CTCs mobility and safety benefits from grade separations
- Ports facilitating aggressive on-dock expansion
- State contribution to State leadership in goods movement
- ALL REDUCED AIR POLLUTION AND IMPROVED MOBILITY

Proposed PPP Cost Allocation



MAGLEV/HSRT For Freight

Summary of Funding Requirements

Costs

- Truck Lanes \$20 billion
- Freight Rail Combination
 - With Electrification \$15 billion
 - With Engine Upgrade \$9 billion
- MAGLEV/HSRT
 - Freight System \$12.5 billion

Potential Funding Sources

- User Fees
 - Tolls
 - TEU Fees
 - MAGLEV/HSRT Transport Fee
 - Railroad Contribution
- Public Financing
 - Existing Sources (Federal and State Contributions, County Transportation Commissions)
 - New Sources (e.g., Regional Gas Tax)

Discussion

Discussion & Feedback

- Relative Priorities of Proposed Projects
- Sources of Public Sector Contributions



Proposed Goods Movement Projects and Policy Options